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09/679,480	10/05/2000	Yasuo Suzuki	197484US0	7558

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EXAMINER

NOTE, JANIS L

ART UNIT	PAPER NUMBER
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1753

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9

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/679,480

Applicant(s)

SUZUKI et al.

Examiner

J. DOTE

Group Art Unit

1753

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- ☒ Responsive to communication(s) filed on 10/26/01
- ☒ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- ☒ Claim(s) 1, 3-7, 10, 11, 13-17, 20, 22-26, 29, 31-35 is/are pending in the application.
- Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- ☒ Claim(s) 1, 3-7, 10, 11, 13-17, 20, 22-26, 29, 31-35 is/are rejected.
- ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- ☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement

## Application Papers

- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119 (a)-(d)

- ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☒ All ☐ Some\* ☐ None of the:
  - ☒ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

\*Certified copies not received: \_\_\_\_\_

## Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other \_\_\_\_\_

Office Action Summary

1. The examiner acknowledges the cancellation of claims 2, 8, 9, 12, 18, 19, 21, 27, 28, 30, 36, and 37, and the amendments to claims 1, 3-5, 10, 13-15, 20, 22-24, 29, and 31-33, filed in Paper No. 8 on Oct. 26, 2001. Claims 1, 3-7, 10, 11, 13-17, 20, 22-26, 29, and 31-35 are pending.

2. The objection to the specification set forth in the Office action mailed Jun. 26, 2001, Paper No. 6, paragraph 3, has been withdrawn in response to the amendments to the specification in the paragraph bridging pages 34 and 35, and at page 36, lines 4-18, filed in Paper No. 8.

The rejection of claim 1 under 35 U.S.C. 102(b) over US 5,578,405 (Ikegami), set forth in Paper No. 6, paragraph 6, has been withdrawn in response to the amendment to claim 1, adding the limitations requiring that the photosensitive layer comprise a charge generation layer comprising a phthalocyanine pigment and a particular asymmetric bisazo pigment represented by formula (I), and a charge transport layer comprising a particular organic sulfur-containing compound represented by formulas (III), (S-1), (S-2), and (S-3). Ikegami discloses an electrophotographic photoreceptor comprising a single-layered photosensitive layer, not the bilayered photosensitive layer recited in the instant claims.

The rejections of claim 1 under 35 U.S.C. 102(b) over US 5,595,845 (Maeda), as evidenced by Ikegami; and of claims 10, 11, 18, and 29 under 35 U.S.C. 103(a) over Maeda combined with Schaffert, Electrophotography, pages 35, 50-51, set forth in Paper No. 6, paragraphs 7 and 8, respectively, have been withdrawn in response to the amendments to claims 1 and 10, adding the limitation that a charge transport layer comprise the particular sulfur-containing compound represented by formulas (III), (S-1), (S-2), and (S-3). Maeda discloses a photosensitive layer comprising the sulfur-containing compound (I-25), which meets formula (S-1) recited in instant claims 1 and 10. Example 5 at cols. 15-16. However, Maeda discloses that said compound is present in the charge generation layer, not the charge transport layer as required by the instant claims.

The rejection of claims 1, 8-11, 18-20, 27-29, 36, and 37 under 35 U.S.C. 103(a) as being unpatentable over United Kingdom Patent 2,336,441 (GB'441), as evidenced by Ikegami, combined with Japanese Patent 07-295250 (JP'250), as evidenced by the Japanese Patent Office (JPO) machine translation of JP'250, set forth in Paper No. 6, paragraph 9, has been withdrawn in response to the amendment to claims 1, 10, 20, and 29, adding the limitation requiring that the photosensitive layer comprise a charge

generation layer comprising a phthalocyanine pigment and a particular asymmetric bisazo pigment represented by formula (I). GB'441 does not teach the charge generating layer recited in the instant claims. See GB'441, example I-1 at pages 48-52.

The rejections under 35 U.S.C. 103(a) of claims 1, 8-10, 18, 19, 29, 36, and 37 over US 5,190,839 (Fujimaki) combined with JP'250, as evidenced by the JPO machine translation of JP'250; and of claims 10, 11, 18-20, 27, and 28 under 35 U.S.C. 103(a) over Fujimaki combined with JP'250 and US 5,047,803 (Kanoto), set forth in Paper No. 6, paragraphs 10 and 11, respectively, have been withdrawn in response to the amendments to claims 1, 10, 20, and 29, adding the limitation requiring that the photosensitive layer comprise a charge generation layer comprising a phthalocyanine pigment and a particular asymmetric bisazo pigment represented by formula (I). Fujimaki does not teach the charge generation layer recited in the instant claims. See Fujimaki, example 9 at cols. 27 and 28.

3. Claims 1, 3-5, 10, 11, 13-15, 29, and 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent 09-127711 (JP'711), as evidenced by the Japanese Patent Office (JPO) machine translation of JP'711, combined with Japanese Patent 07-295250 (JP'250), as evidenced by the DERWENT machine-assisted translation of JP'250.

JP'711 discloses an electrophotographic photoreceptor comprising a conductive substrate, a charge generation layer, and a charge transport layer. The charge generation layer comprises an oxy-titanium phthalocyanine pigment and an asymmetric bisazo pigment that meets the limitations of formula (II) recited in instant claim 4. Translation, photoconductor B, paragraphs 0031-0033 and 0035-0038. The weight ratio of phthalocyanine pigment to bisazo pigment is 2:1, which meets the ratio recited in instant claim 3. (The weight ratio is determined from 10 parts by weight of the phthalocyanine pigment to 5 parts by weight of the bisazo pigment. Translation, paragraph 0033.) JP'711 further discloses that the phthalocyanine pigment can be preferably a X-form metal-free phthalocyanine or a  $\tau$ -form metal-free phthalocyanine pigment, which meet the limitation recited in instant claim 5. Translation, paragraph 0015. JP'711 discloses that its photoreceptor comprising a X-form or  $\tau$ -form metal-free phthalocyanine pigment and a bisazo pigment has photographic sensitivity to long wavelength light, and can be fully charged from the "first rotation." Translation, paragraph 0011.

JP'711 further discloses that its photoreceptor can be used in an electrophotographic image forming apparatus that meets the other components recited in instant claims 10 and 11. Translation, paragraphs 0029 and 0043. JP'711 also discloses

that its photoreceptor can be used in a reversal development image forming method that meets the steps recited in instant claim 29. Translation, paragraphs 0029 and 0043.

JP'711 does not disclose that the charge transport layer comprises a sulfur-containing compound as recited in the instant claims. However, JP'711 discloses that the charge transport layer can comprise any well-known antioxidant. Translation, paragraph 0027.

JP'250 discloses sulfur-containing compounds that meet the limitations of formulas (III), (S-1), (S-2), and (S-3) recited in the instant claims. JP'250 discloses that said sulfur-containing compound can be used as an antioxidant in charge transport layers of photoreceptors. Translation, paragraph 0007, compounds (I-1) to (I-4) at paragraph 0026, compounds (II-1) to (II-3) at paragraph 0028. JP'250 discloses that said sulfur-containing compounds prevent the deterioration of the photoreceptor due to ozone in the ambient air or due to strong light irradiation. The photoreceptor has improved potential stability over long periods of time. Translation, paragraphs 0003, 0006-0007, and paragraph 0054, lines 1-4.

It would have been obvious for a person having ordinary skill in the art to use JP'250's sulfur-containing compound that meets the limitation of formulas (III), (S-1), (S-2), or (S-3) recited in the instant claims, as the antioxidant in the charge

transport layer in the photoreceptor disclosed by JP'711, because that person would have had a reasonable expectation of successfully obtaining a photoreceptor that has improved potential stability over long periods of time, thereby providing an electrophotographic imaging apparatus and imaging method that provide stable toner images after many repeated copies.

4. Claims 20 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'711, as evidenced by the JPO machine translation of JP'711, combined with JP'250, as evidenced by the DERWENT machine-assisted translation of JP'250, as applied to claims 1, 3-5, 10, 11, and 13-15 above, further combined with US 5,047,803 (Kanoto).

JP'711 combined with JP'250 renders obvious an electrophotographic photoreceptor and an electrophotographic imaging apparatus as described in paragraph 3 above, which is incorporated herein by reference.

JP'711 does not disclose that the electrophotographic photoreceptor can be used in a process cartridge as recited in the instant claims. However, the use of process cartridges in electrophotographic apparatuses are well-known in the art. Kanoto discloses that process cartridges comprising an electrophotographic photoreceptor and at least one processing means, such as a contact roller charger or corona charger, a



developing device, a cleaner and other elements, are widely used in the field of image forming apparatuses that are small and that do not require maintenance. Col. 1, lines 18-28, col. 3, lines 36-38. Kanoto discloses an imaging forming apparatus comprising a process cartridge that is easily dismounted from the main assembly of the image forming apparatus. Col. 1, lines 60-63. Kanoto further discloses that the process cartridge or image forming apparatus can comprise a developing device which reverse develops the electrostatic latent image with a developer having the same polarity as the charge remaining on the photoreceptor. Col. 3, lines 57-61.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Kanoto, to incorporate the electrophotographic photoreceptor rendered obvious over the combined teachings of JP'711 and JP'250 in Kanoto's detachable process cartridge in his image forming apparatus, because that person would have had reasonable expectation of successfully obtaining an image forming apparatus comprising an easily detachable process cartridge having the benefits of being small and free from maintenance, and having the benefits disclosed by JP'711 and JP'250.

5. Claims 6, 16, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'711, as evidenced by the JPO machine

translation of JP'711, combined with JP'250, as evidenced by the DERWENT machine-assisted translation of JP'250, as applied to claims 5, 15, and 33 above, further combined with US 4,507,374 (Kakuta) and DERWENT abstract Acc. No. 1983-816039.

JP'711 combined with JP'250 renders obvious a photoreceptor, an electrophotographic imaging apparatus, and a reversal developing imaging method as described in paragraph 3 above, which is incorporated herein by reference.

As set forth in paragraph 3, JP'711 discloses that the phthalocyanine pigment can be preferably a  $\tau$ -form metal-free phthalocyanine. Translation, paragraph 0015. JP'711 discloses that its photoreceptor comprising a  $\tau$ -form metal-free phthalocyanine pigment and a bisazo pigment has photographic sensitivity to long wavelength light, and can be fully charged from the "first rotation." Translation, paragraph 0011. JP'711 does not disclose that the  $\tau$ -form metal-free phthalocyanine pigment has the X-ray diffraction pattern recited in the instant claims.

However, Kakuta discloses a  $\tau$ -form metal-free phthalocyanine pigment having a X-ray diffraction pattern with characteristic Bragg angles ( $2\theta \pm 0.2^\circ$ ) of 7.6, 9.2, 16.8, 17.4, 20.4, and 20.9. Col. 2, lines 16-19, col. 4, lines 38-42, 53-55, and Fig. 4. Kakuta discloses that photoreceptors comprising said phthalocyanine exhibits high sensitivities to longer wavelength

light. Col. 1, lines 58-63. Kakuta discloses that said phthalocyanine exhibits a maximum sensitivity at 790-810 nm, and is most useful in photoconductors image-wise exposed to a semiconductor laser. Col. 9, lines 38-41.

Kakuta does not disclose that the X-ray diffraction pattern of his  $\tau$ -form metal-free phthalocyanine exhibits Bragg angles of  $21.7^\circ$  and  $27.6^\circ$  as recited in the instant claims. However, the instant specification discloses that the  $\tau$ -form metal-free phthalocyanine having the X-ray diffraction pattern recited in the instant claims can be prepared by a method described in Japanese Patent 58-182639 (JP' 639). Specification, page 21, lines 11-19. Kakuta is the US equivalent of JP' 639. See the DERWENT abstract Acc. No. 1983-816039. Because all six Bragg angles disclosed by Kakuta correspond to a Bragg angle recited in the instant claims, and Kakuta's  $\tau$ -form metal-free phthalocyanine is obtained by a method that makes a  $\tau$ -form metal-free phthalocyanine having the X-ray diffraction pattern recited in the instant claims, it is reasonable to presume that Kakuta's  $\tau$ -form metal-free phthalocyanine has a X-ray diffraction pattern that meets the limitation recited in the instant claims. The burden is on applicants to prove otherwise. In re Fitzgerald, 205 USPQ 594 (CCPA 1980).

It would have been obvious for a person having ordinary skill in the art to use Kakuta's  $\tau$ -form metal-free phthalocyanine

pigment as the metal-free phthalocyanine in the photoreceptor rendered obvious over the combined teachings of JP'711 and JP'250, because that person would have had a reasonable expectation of successfully obtaining a photoreceptor having improved sensitivity to the longer wavelength region, thereby providing an electrophotographic imaging apparatus and a reversal development imaging method that provide good toner images as taught by JP'711 and JP'250.

6. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP'711, as evidenced by the JPO machine translation of JP'711, combined with JP'250, as evidenced by the DERWENT machine-assisted translation of JP'250, and Kanoto, as applied to claim 24 above, further combined with Kakuta and DERWENT abstract Acc. No. 1983-816039.

JP'711 combined with JP'250 and Kanoto renders obvious a process cartridge as described in paragraph 4 above, which is incorporated herein by reference.

JP'711 discloses that the phthalocyanine pigment can be preferably a  $\tau$ -form metal-free phthalocyanine. JP'711 does not disclose that the  $\tau$ -form metal-free phthalocyanine pigment has the X-ray diffraction pattern recited in the instant claims. However, Kakuta discloses a  $\tau$ -form metal-free phthalocyanine pigment that appears to have a X-ray diffraction pattern that

meets the limitations recited in the instant claims. The discussions of JP'711 and Kakuta in paragraph 5, supra, are incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art to use Kakuta's  $\pi$ -form metal-free phthalocyanine pigment as the metal-free phthalocyanine in the photoreceptor rendered obvious over the combined teachings of JP'711 and JP'250, and to use said photoreceptor in the apparatus disclosed by Kanoto, because that person would have had a reasonable expectation of successfully obtaining a photoreceptor having improved sensitivity to the longer wavelength region, thereby providing an electrophotographic imaging apparatus comprising an easily detachable process cartridge that provide good toner images as taught by JP'711 and JP'250.

7. Claims 7, 17, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'711, as evidenced by the JPO machine translation of JP'711, combined with JP'250, as evidenced by the DERWENT machine-assisted translation of JP'250, as applied to claims 5, 15, and 33 above, further combined with US 3,357,989 (Byrne).

JP'711 combined with JP'250 renders obvious a photoreceptor, an electrophotographic imaging apparatus and a reversal

developing imaging method as described in paragraph 3 above, which is incorporated herein by reference.

As set forth in paragraph 3, supra, JP'711 discloses that the phthalocyanine pigment can be preferably a X-form metal-free phthalocyanine. Translation, paragraph 0015. JP'711 discloses that its photoreceptor comprising a X-form metal-free phthalocyanine pigment and a bisazo pigment has photographic sensitivity to long wavelength light, and can be fully charged from the "first rotation." Translation, paragraph 0011. JP'711 discloses that a X-form metal-free phthalocyanine has especially high photographic sensitivity. Translation, paragraph 0015. JP'711 does not disclose that the X-form metal-free phthalocyanine pigment has the X-ray diffraction pattern recited in the instant claims.

However, a X-form metal-free phthalocyanine pigment having a X-ray diffraction pattern recited in the instant claims is well-known in the art, as shown by Byrne. Byrne discloses a X-form metal-free phthalocyanine pigment having a X-ray diffraction pattern that meets the limitations recited in the instant claims. See Fig. 1, and col. 2, lines 50-54, col. 5, lines 14-22, and reference claim 1. Byrne's phthalocyanine has photosensitivity to the wavelength region of greater than 700 nm. See Fig. 2. Byrne discloses that his phthalocyanine is especially useful as a photoconductive material in electrophotography, and that it

provides "surprisingly high photosensitivity." Col. 2, lines 3-9.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Byrne, to use a well-known X-form metal-free phthalocyanine pigment having a X-ray diffraction pattern that meets the limitation of the instant claims as the metal-free phthalocyanine in the photoreceptor rendered obvious over the combined teachings of JP'711 and JP'250, because that person would have had a reasonable expectation of successfully obtaining a photoreceptor having improved sensitivity to the longer wavelength region, thereby providing an electrophotographic imaging apparatus and a reversal development imaging method that provide good toner images as taught by JP'711 and JP'250.

8. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP'711, as evidenced by the JPO machine translation of JP'711, combined with JP'250, as evidenced by the DERWENT machine-assisted translation of JP'250, and Kanoto, as applied to claim 24 above, further combined with Byrne.

JP'711 combined with JP'250 and Kanoto renders obvious a process cartridge as described in paragraph 4 above, which is incorporated herein by reference.

JP'711 does not disclose that the X-form metal-free phthalocyanine pigment has the X-ray diffraction pattern recited in the instant claims. However, a X-form metal-free phthalocyanine pigment having a X-ray diffraction pattern recited in the instant claims is well-known in the art, as shown by Byrne. The discussions of JP'711 and Byrne in paragraph 7, supra, are incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Byrne, to use a well-known X-form metal-free phthalocyanine pigment having a X-ray diffraction pattern that meets the limitation of the instant claims as the metal-free phthalocyanine in the photoreceptor rendered obvious over the combined disclosures JP'711 and JP'250, and to use said photoreceptor in the apparatus disclosed by Kanoto, because that person would have had a reasonable expectation of successfully obtaining a photoreceptor having improved sensitivity to the longer wavelength region, thereby providing an electrophotographic imaging apparatus comprising an easily detachable process cartridge that provides good toner images as taught by JP'711 and JP'250.

9. Claims 1, 3-5, 10, 13-15, 29, and 31-33 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-9 of U.S. Patent



No. 6,136,483 (Suzuki) in view of JP'250, as evidenced by the DERWENT machine-assisted translation of JP'250.

Suzuki claims an electrophotographic photoreceptor that meets the limitations recited in the instant claims, but for the organic sulfur-containing compound recited in the instant claims. The photoreceptor comprises a conductive substrate, a charge generation layer, and a charge transport layer. The charge generation layer comprises an asymmetric bisazo pigment that meets the limitations of formula (I) recited in instant claim 1 and either a  $\tau$ -type metal-free phthalocyanine pigment or a X-form metal-free phthalocyanine that meets the limitation recited in instant claim 5. See reference claims 1 and 5. The weight ratio of phthalocyanine pigment to bisazo pigment is 1:5 to 5:1, which meets the ratio recited in instant claim 3. See reference claim 1. Suzuki further claims that the asymmetric bisazo pigment can be that represented by formula (II) in reference claim 4, which meets the limitation recited in instant claim 4.

Suzuki further claims an electrophotographic image forming apparatus comprising the photoreceptor that meets the other components recited in instant claim 10. See reference claim 9. Suzuki also discloses a reversal development image forming method using said photoreceptor that meets the steps recited in instant claim 29. See reference claim 8.

As discussed supra, the reference claims do not recite that the charge transport layer comprises a sulfur-containing compound as recited in the instant claims.

JP'250 discloses a sulfur-containing compound that meets the limitation of formula (III) recited in the instant claims. JP'250 discloses that said sulfur-containing compound can be used as an antioxidant in charge transport layers of photoreceptors. The discussion of JP'250 in paragraph 3, supra, is incorporated herein by reference.

It would have been obvious to a person having ordinary skill in the art to use JP'250's sulfur-containing compound that meets the limitation of formula (III) recited in the instant claims as the antioxidant in the charge transport layer in the photoreceptor recited in Suzuki's claims, because that person would have had a reasonable expectation of successfully obtaining a photoreceptor that has improved potential stability over long periods of time, thereby providing an electrophotographic imaging apparatus and imaging method that provide stable toner images after many repeated copies.

10. Claims 6, 16, and 34 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-9 of Suzuki in view of JP'250, as evidenced by the DERWENT machine-assisted translation of JP'250,

further in view of Kakuta and DERWENT abstract Acc. No. 1983-816039.

The subject matter recited in the claims of Suzuki in view of the teachings of JP'250 renders obvious a photoreceptor, an electrophotographic imaging apparatus, and a reversal developing imaging method as described in paragraph 9 above, which is incorporated herein by reference.

The Suzuki claims do not recite that the  $\tau$ -form metal-free phthalocyanine recited in the reference claims has the X-ray diffraction pattern recited in the instant claims. However, Kakuta discloses a  $\tau$ -form metal-free phthalocyanine that appears to have a X-ray diffraction pattern as recited in the instant claims. The discussion of Kakuta in paragraph 5, supra, is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art to use Kakuta's  $\tau$ -form metal-free phthalocyanine pigment as the metal-free phthalocyanine in the photoreceptor rendered obvious over the subject matter recited in Suzuki combined with teachings of JP'250, because that person would have had a reasonable expectation of successfully obtaining a photoreceptor having improved sensitivity to the longer wavelength region, thereby providing an electrophotographic imaging apparatus and a reversal development imaging method that

are capable of providing toner images using a longer wavelength image-wise exposure source.

11. Claims 7, 17, and 35 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-9 of Suzuki in view of JP'250, as evidenced by the DERWENT machine-assisted translation of JP'250, further in view of Byrne.

The subject matter recited in the claims of Suzuki in view of the teachings of JP'250 renders obvious a photoreceptor, an electrophotographic imaging apparatus, and a reversal developing imaging method as described in paragraph 9 above, which is incorporated herein by reference.

The Suzuki claims do not recite that the X-form metal-free phthalocyanine recited in the reference claims has the X-ray diffraction pattern recited in the instant claims. However, a X-form metal-free phthalocyanine pigment having a X-ray diffraction pattern recited in the instant claims is well-known in the art, as shown by Byrne. The discussion of Byrne in paragraph 7 above is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Byrne, to use a well-known X-form metal-free phthalocyanine pigment having a X-ray diffraction pattern that meets the limitation of the

instant claims as the metal-free phthalocyanine in the photoreceptor rendered obvious over the subject matter recited in Suzuki combined with teachings of JP'250, because that person would have had a reasonable expectation of successfully obtaining a photoreceptor having improved sensitivity to the longer wavelength region, thereby providing an electrophotographic imaging apparatus and a reversal development imaging method that are capable of providing toner images using a longer wavelength image-wise exposure source.

12. Applicants' arguments filed in Paper No. 8 with respect to the rejections over JP'711 combined with JP'250 and over Suzuki combined with JP'250 above have been fully considered but they are not persuasive.

(1) Applicants argue that neither JP'711 nor JP'250 recognize the significant improvements in the reduction of black spots and undesired images obtained by the combination of the particular asymmetric bisazo pigment and particular organic sulfur compounds recited in the instant claims as noted by applicants. Applicants argue that JP'250 teaches that the organic sulfur-containing compounds are "useful only in the context of *symmetric* azo pigments because only symmetric azo pigments are disclosed in JP'250" (emphasis in the original).

These arguments are not persuasive because the reasons to combine the references do not have to be those of applicants. As set forth in paragraph 3, supra, and acknowledged by applicants in Paper No. 8, page 17, lines 1-3, JP'711's photoconductor B meets the limitations recited in the instant claims, but for the presence of the particular sulfur-containing compound recited in the instant claims. Photoconductor B's charge generation layer comprises a phthalocyanine pigment and an asymmetric bisazo compound. JP'711 teaches that a known antioxidant can be added to the charge transport layer.

Contrary to applicants' comments, JP'250 does not teach that its sulfur-containing antioxidants are useful only in the context of "symmetric" azo pigments. Rather, JP'250 teaches that its sulfur-containing antioxidants are useful in any organic photoreceptor comprising a charge generation layer and a charge transport layer. See the DERWENT translation, reference claim 1, and paragraph 0007. JP'250 does not limit the charge generation material. JP'250 teaches that the charge generation material can be "dyestuffs, such as phthalocyanine compounds . . . various azo, a quinone, . . . etc." DERWENT translation, paragraph 0023. As set forth in the rejection, JP'250 teaches that the presence of the sulfur-containing antioxidant in the charge transport layer prevents the deterioration of the photoreceptor due to ozone in the ambient air or due to strong light irradiation,

thereby providing a photoreceptor with improved the potential stability over long periods of time. JP'250 further teaches that its sulfur-containing antioxidants provide photoreceptors with improved stability of electrification and sensitivity over long periods of time compared to known hindered phenol antioxidants. DERWENT translation, Table 1, comparative examples 3 and 4, and paragraph 0054, lines 14-18. Thus, JP'250 provides ample reason to use its sulfur-containing antioxidant in the charge transport layer of JP'711's photoconductor B. Accordingly, the instant claimed invention is prima facie obvious over combined teachings of JP'711 and JP'250.

(2) Applicants argue that there is no "motivation" to combine the teachings of JP'250 with Suzuki and no expectation of success because: (1) Suzuki is concerned with asymmetric bisazo compounds and does not disclose or suggest that an antioxidant should be used; and (2) JP'250 teaches that its sulfur compounds are useful only with symmetric azo compounds.

However, as admitted by applicants, the use of organic sulfur-containing antioxidants in photoreceptors is well-known in the art. See the instant specification, page 4, lines 2-10. As discussed in item (1) above, JP'250 does not disclose that its sulfur-containing antioxidants is only useful with symmetric azo compounds. Rather, JP'250 teaches that its sulfur-containing antioxidants can be used in the charge transport layers of any

organic photoreceptor comprising a charge generation layer and a charge transport layer. Accordingly, the instant claimed subject matter is prima facie unpatentable over the claimed subject matter recited in Suzuki combined with the teachings of JP'250.

(3) Applicants further argue that any prima facie obviousness is rebutted by the evidence provided in the instant specification.

However, the evidence in the present record does not show that the instantly claimed invention yields unexpected results over the prior art of JP'711 or over the claimed subject matter recited in Suzuki. The instant specification shows that photoreceptors comprising the particular sulfur-containing compound provided 50,000 images with no black spots and no undesired images. See Table 16, examples 5-16. The specification shows that photoreceptors comprising the same charge generation layers and charge transport layers as used in examples 5-16, but without the sulfur-containing compounds, provided images with black spots from the 38,000th image and with background fouling. See Table 16, comparative examples 5 and 13. However, Suzuki shows that photoreceptors similar to comparative examples 5 and 13, evaluated under similar experimental conditions, provided 50,000 images with no black spots and no undesired images. See Suzuki, col. 63, line 66, to col. 64, line 26, and Table 1, examples 9-15. Suzuki's photoconductors in



examples 8-15 comprise either a metal-free r-type or X-type phthalocyanine pigment and the same asymmetric bisazo compounds used in instant examples 5-16 and in comparative examples 5 and 13; but they are free of sulfur-containing compounds. Thus, on the present record, it appears that the use of the particular sulfur-containing compounds recited in the instant claims does not provide unexpected results in image quality as alleged by applicants. Accordingly, the rejections over the combined teachings of JP'711 and JP'250, and over claimed subject matter recited in Suzuki combined with the teachings of JP'250 stand.

13. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (703) 308-3625. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Nam Nguyen, can be reached on (703) 308-3322. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9311 (Rightfax) for after final faxes, and (703) 305-7718 for other official faxes.

Any inquiry of papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Alva Catlett, whose telephone number is (703) 308-1100.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

JLD  
January 6, 2002

*Janis L. Dote*  
JANIS L. DOTE  
PRIMARY EXAMINER  
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1700